## **CLAIMS**

- 1. An electrochemical cell which comprises the following:-
  - (i) a positive electrode which, in addition to the cathodic active material, contains a compound MA $_x$ OY, where M is an alkali or alkaline earth metal and A is a non-metallic element where 0.3 <=x<=2.0 and 1.3<=y<=4.0, such that on charging, the acid anhydride A $_x$ Oy is generated "in situ", and
  - (ii) a solid composite polymer film acting as separator whose structural units contain basic functional groups containing nitrogen atoms in 5 or 6 member heterocyclic rings or in tertiary aliphatic configuration into which is incorporated an ionisable salt LiX, having a higher decomposition voltage than MAxOy, where X is an acid radical.
- 2. An electrochemical cell as claimed in claim 1 wherein the alkali metal is lithium.
- 3. An electrochemical cell as claimed in claim 1 or claim 2 wherein the non-metallic element is sulphur, nitrogen, carbon or phosphorus.
- 4. An electrochemical cell as claimed in any one of claims 1-3 wherein the acid radical X is one or more of the following:-

AlCl4, BF4, PF6, Cl04, CF3SO3, N(CF3SO2)2.

- 5. An electrochemical cell as claimed in claim 1 wherein the alkali metal M is lithium, and the element A is sulphur.
- 6. An electrochemical cell as claimed in claim 1 wherein the compound MA<sub>x</sub>O<sub>y</sub> is lithium dithionite.
- 7. An electrochemical cell as claimed in claim 1 wherein the compound MAxOy is lithium sulphite.
- 8. An electrochemical cell as claimed in claim 1 wherein the compound MAxOy is sodium dithionite.
- 9. An electrochemical cell as claimed in claim 1 wherein the solid polymer is poly(4-vinylpyridine), less than 5% cross linked.
- 10. An electrochemical cell as claimed in claim 1 wherein the solid polymer is poly(vinylpyrrolidone).
- 11. An electrochemical cell as claimed in claim 1 wherein the solid polymer is thermally restructured poly(acrylonitrile) -(CH=C-CN)n-.
- 12. An electrochemical cell as claimed in any one of claims 1 11 wherein the cathode active material is lithium cobalt oxide LiCoO<sub>2</sub> or a mixed lithium nickel cobalt oxide LiNio.85Co<sub>0.15</sub>O<sub>2</sub>.

- 13. An electrochemical cell as claimed in any one of claims 1-11 wherein the cathode active material is lithium sulphite and a transition metal oxide such as VO<sub>2</sub> or MnO<sub>x</sub> where 2 > = x > = 1.
- 14. An electrochemical cell as claimed in any one of claims 1 13 when used as a primary or rechargeable battery or a supercapacitor.